

FIG. 1

Cross section of surface-micromachined high-pressure sensor

0900743-070604

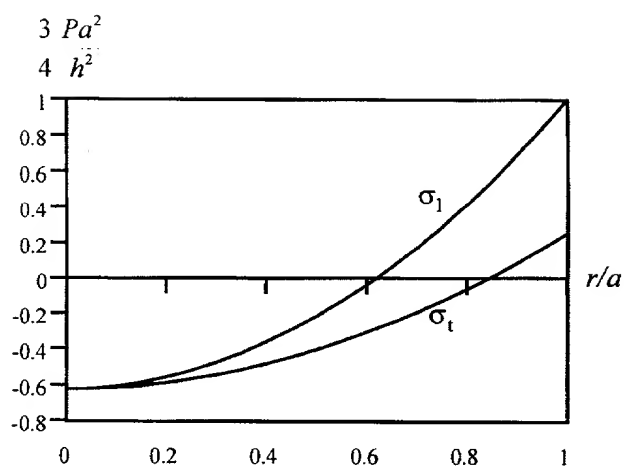


Figure 2 Longitudinal and transverse stress distribution along radius of a circular diaphragm.

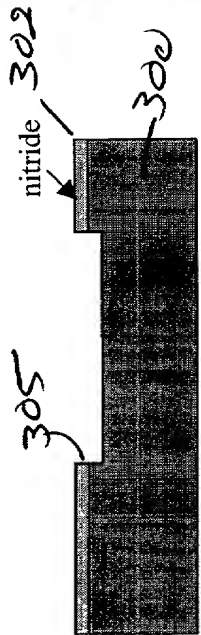


FIG 3A

1. Deposit and pattern nitride.

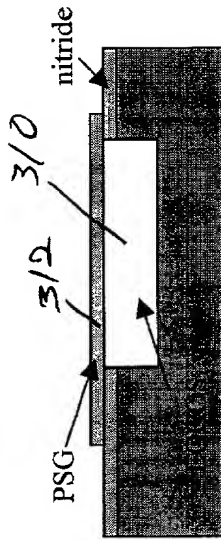


FIG 3B

2. Local oxidation. Deposit and pattern phosphosilicate glass (PSG).

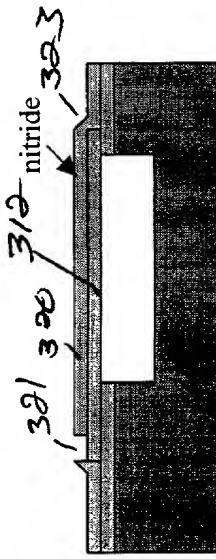


FIG 3C

3. Deposit nitride and open etching holes.

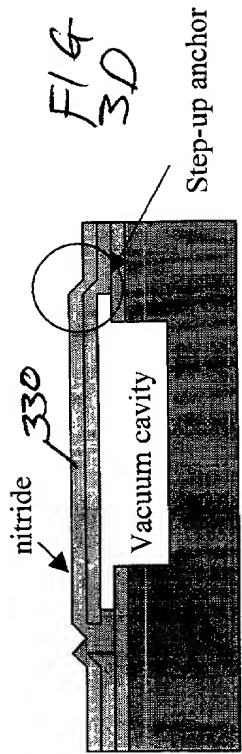


FIG 3D

4. Remove oxide and PSG by 48%HF.

Deposit nitride

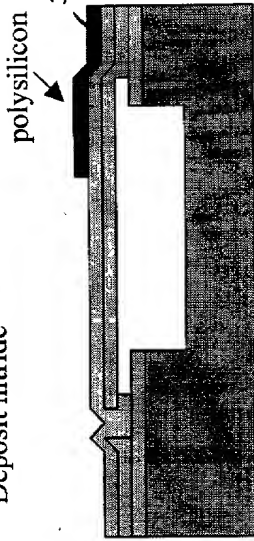
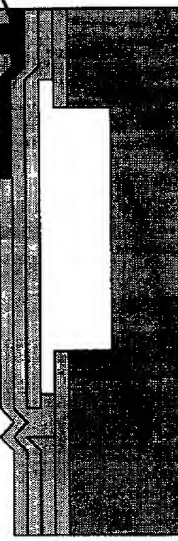


FIG 3E

5. Deposit, dope and pattern polysilicon.

Al 354

FIG 3F



6. Deposit nitride as passivation layer and Al metallization.

Fig

Al pads

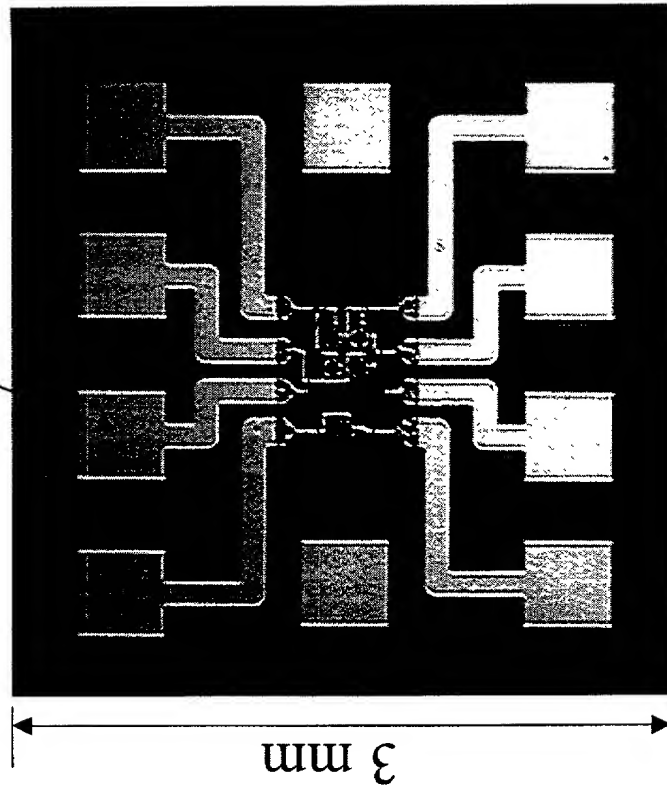
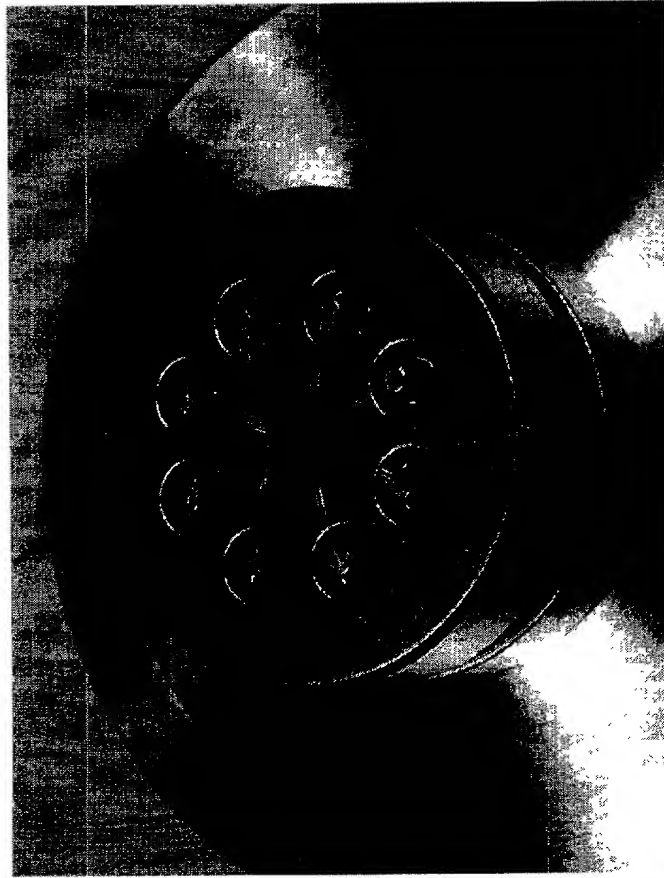


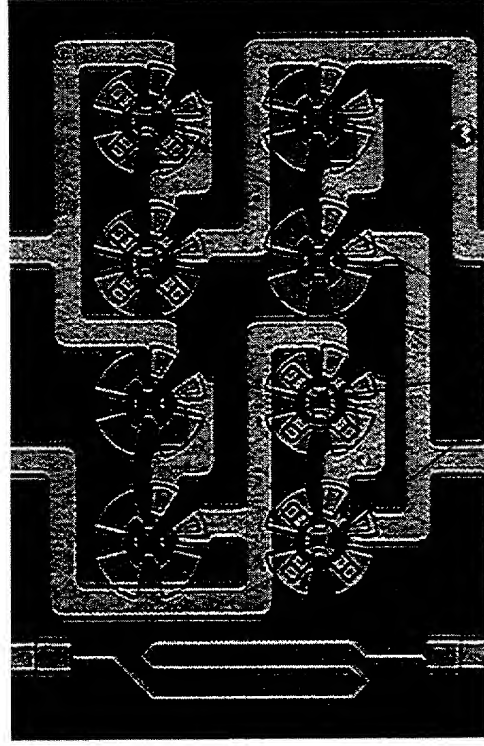
FIG 5



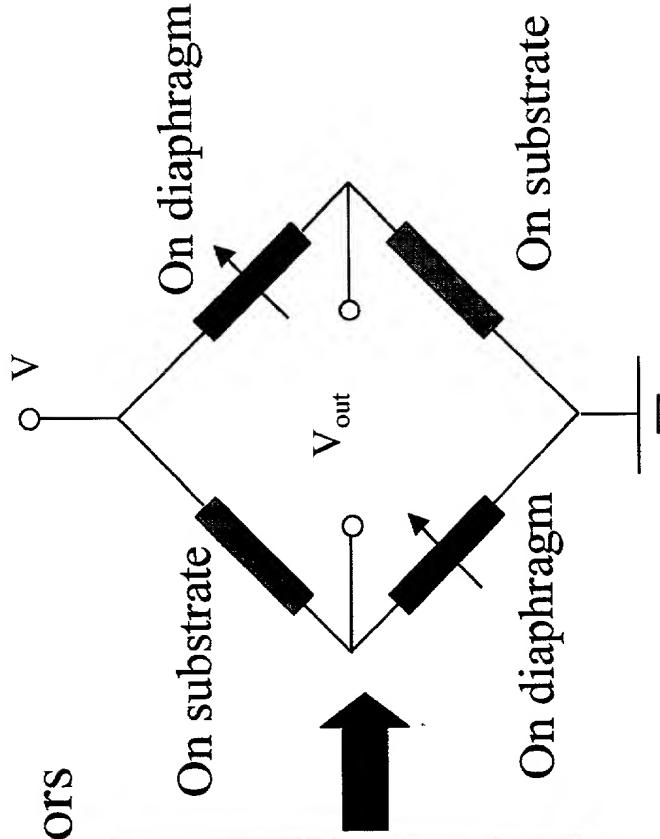
Diced sensor chip

Chip wire-bonded to metal header

Polysilicon thermistor Pressure sensor:
8 polysilicon resistors



4 nitride Diaphragms

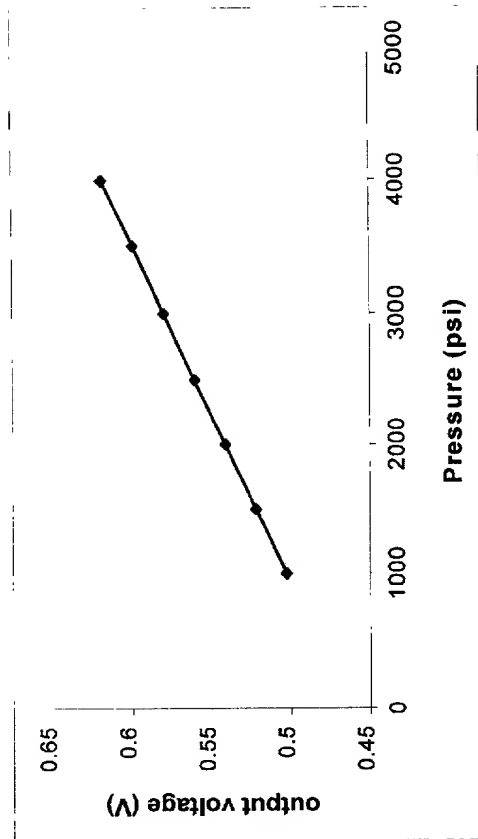


Wheatstone bridge

Multi-diaphragm configuration:

- minimize self-heating effect
- make layout much easier

FIG 6



Calibration curve of the sensor (T = 40 °C)

FIG 7

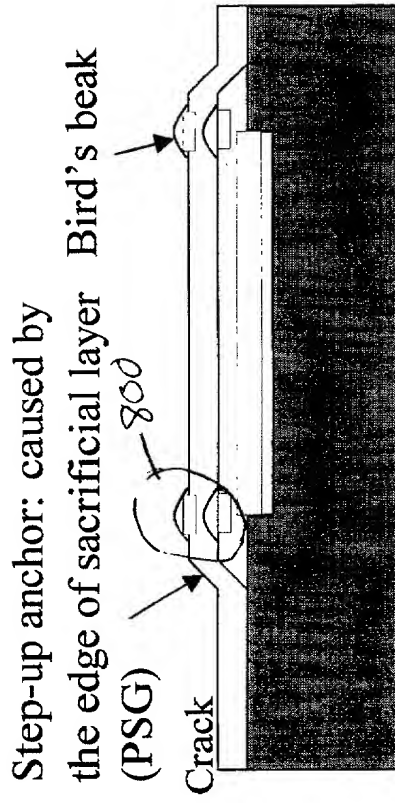


FIG 8
Cross section of sensor diaphragm

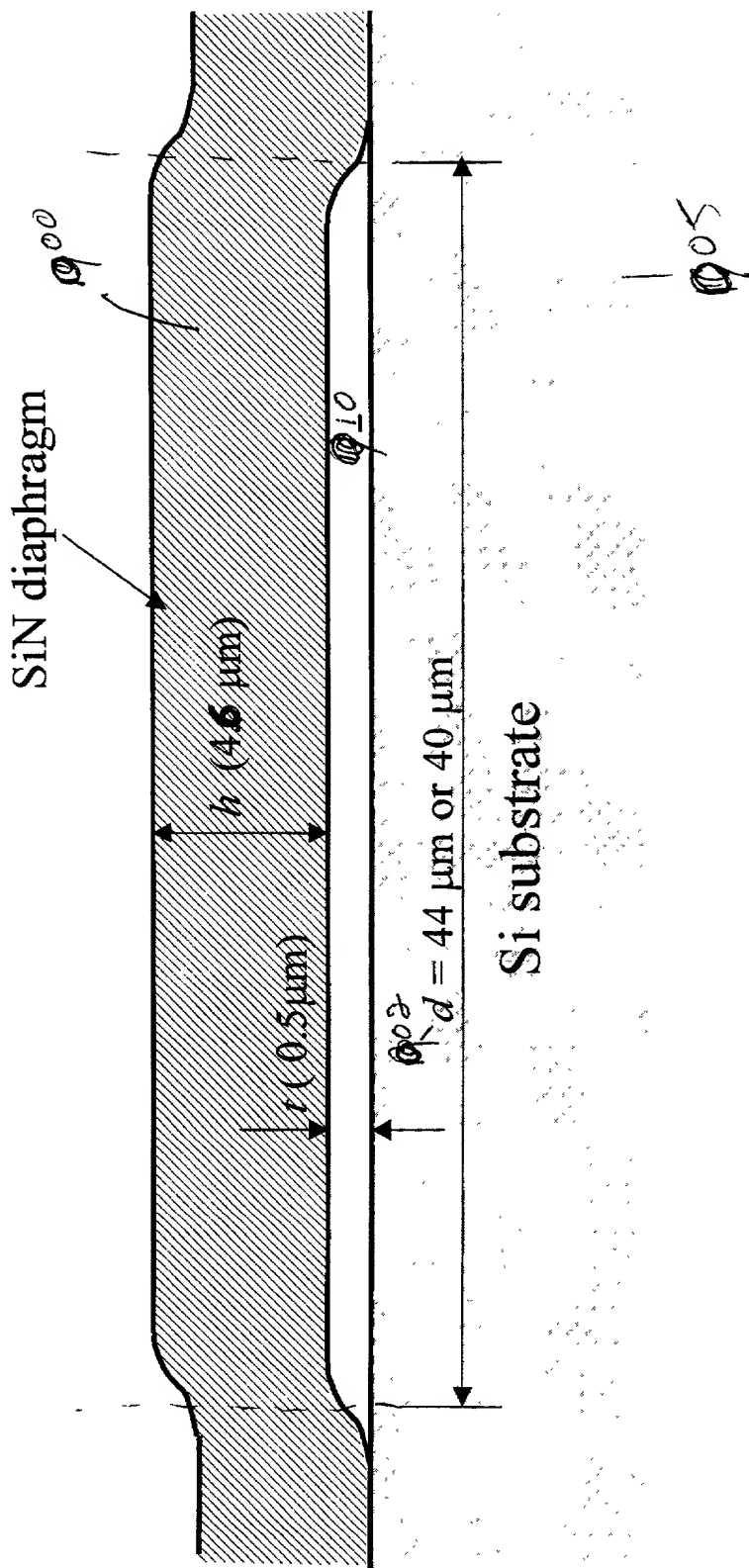
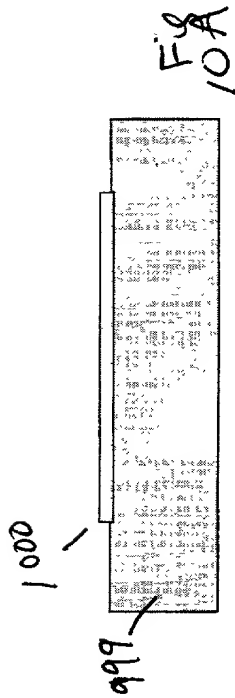
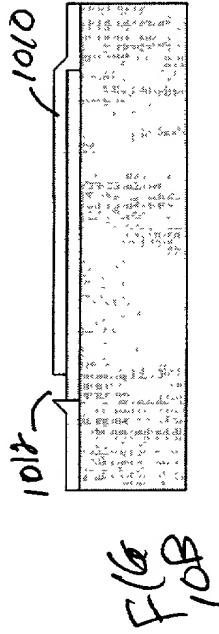


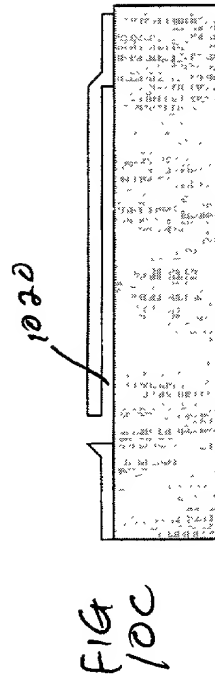
FIG 9



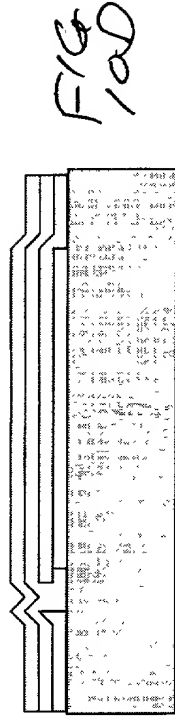
1. Deposit, pattern and reflow
PSG (mask #1)



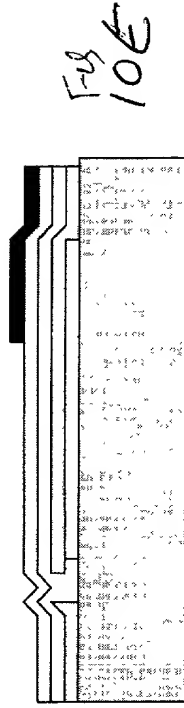
2. Deposit nitride and open etching holes
(mask #2)



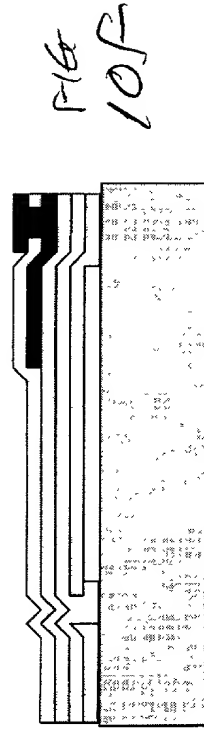
3. Removes PSG by concentrated HF



4. Deposit multi nitride layers



5. Deposit, dope and pattern poly
(mask #3 and #4)



6. Deposit thin nitride (0.2 Om), open
contact holes, and Al metalization
(mask #5 and #6)

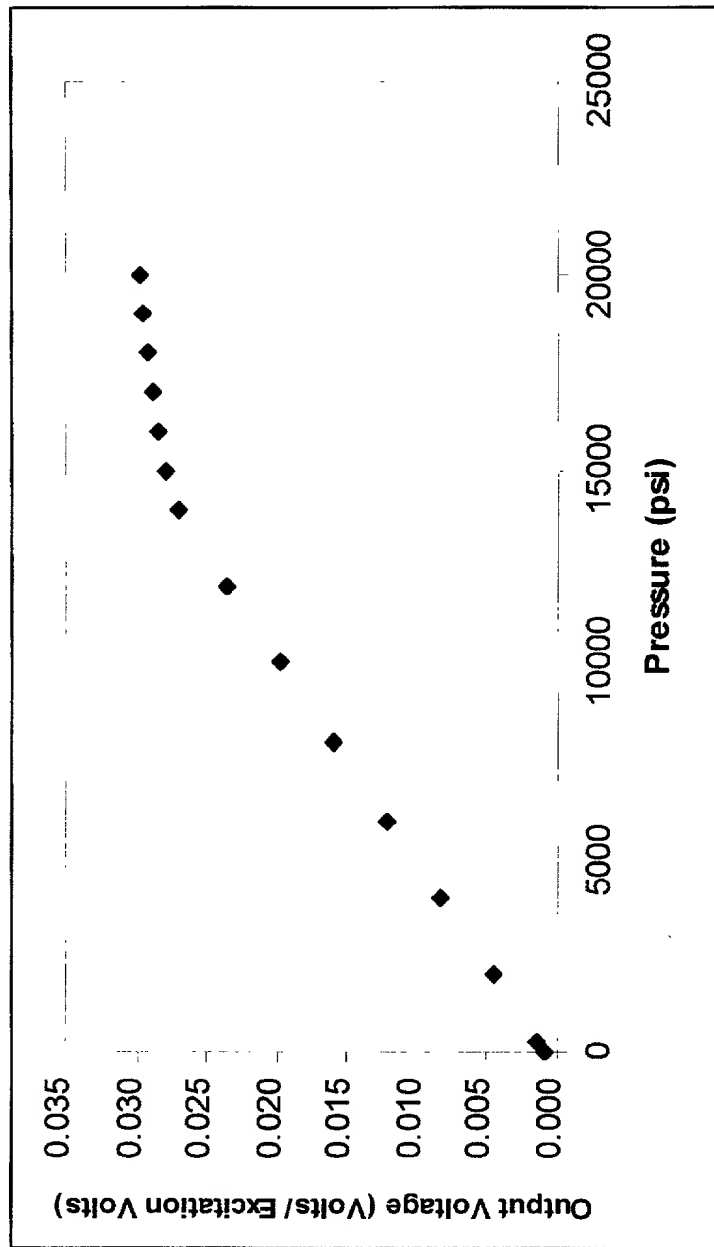
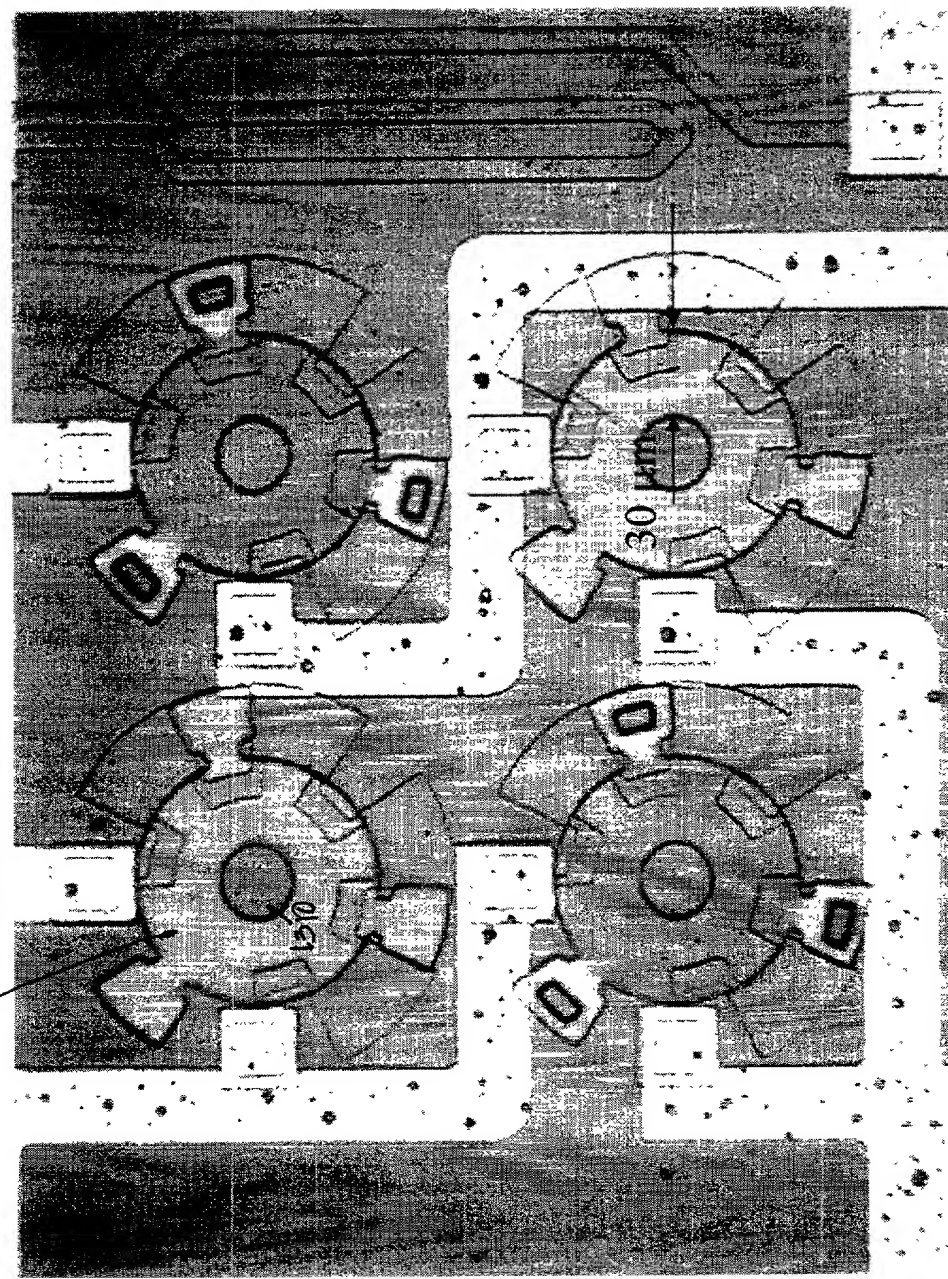


FIG 11

09500743-070601

1305



F/4
18

09900743-070601
T09020" E4200660

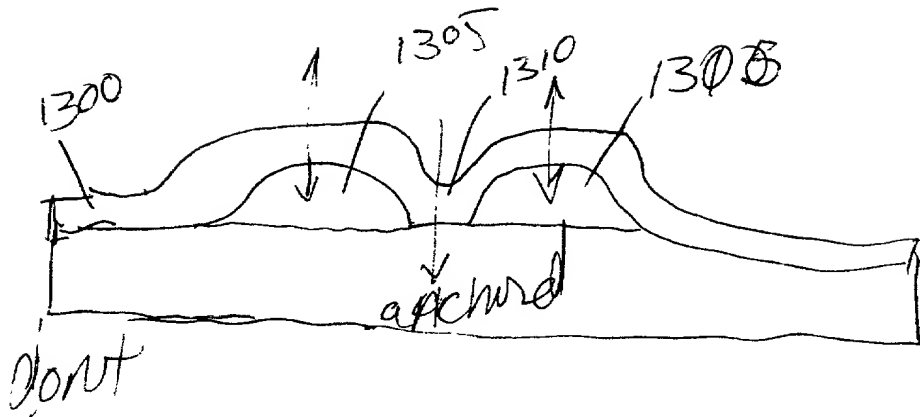


FIG 13